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REMARKS

Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action, dated April 12, 2007.

In the Office Action of April 12, 2007, the following actions were taken:

(1) Claims 1-2, 4-12, and 27-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Pat. No. 63-061065 (hereinafter "Pentel") in view of U.S. Pat. No. 2004/0110869 (hereinafter "Denninger");

(2) Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pentel in view of Denninger and further in view of U.S. Pat. No. 5,279,652 (hereinafter "Kaufmann");

(3) Claims 13-18 and 29-30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,066,439 (hereinafter "Nohr") in view of Pentel and Kaufmann; and

(4) Claims 19-26 and 31-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nohr in view of Pentel and Kaufmann.

It is respectfully submitted that the presently pending claims be allowed based on the remarks below.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 1-32 U.S.C. § 103(a) as being unpatentable over several references.

The Applicant does not deem it necessary to recite the entire case law standard required in order to establish a *prima facie* case of obviousness. However, Applicant, would like to briefly remind the Examiner of the required three criteria for a *prima facie* case of obviousness, namely that the asserted references as modified or combined must: 1) teach or suggest each and every element of the claimed invention; 2) provide sufficient motivation for the modification or combination asserted; and 3) provide a sufficient likelihood of successfully making the modification or combination.

With the above background in mind, the Applicant contends that a *prima facie* case of obviousness with respect to pending claims has not been established. Specifically, the

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references do not provide each and every element of the present claim set and/or sufficient teachings or motivation to be modified or combined in order to arrive at Applicant's claimed invention. Further, Applicant contends that the combination of references is based on hindsight. Therefore, without knowledge of the disclosure of the present invention, one of ordinary skill in the art would not be able to make the combinations proposed to arrive at the claimed invention.

Emphasis on the independent claims is provided herein, as the Applicant asserts that these claims are all patentably distinct over the prior art. Specifically, the Examiner has rejected claims 1-32 as being obvious in view various combinations of prior art, each of which includes at least two of the following references: Pentel, Denninger, Kaufmann, and Nohr. Thus, a brief discussion of the Pentel, Denninger, Kaufmann, and Nohr references is believed to be in order.

Pentel

The Examiner references a highlighter ink composition from the Pentel abstract. The Pentel abstract (English translation) suggests that the purpose of the composition is to keep a highlighter pen tip "slightly drying" "even if the cap is kept removed for a long time." (see Abstract). The abstract does not disclose any purpose or intent that the invention was to reduce smearing of highlighted images, nor does it provide any results or teachings that it would indicate reduction of smear. The Examiner references the composition as containing a) a coloring material; b) an organic solvent; and c) an acid compound (including ascorbic acid). However, Pentel does not appear to disclose the use of a highlighter colorant that is an acid-functionalized pigment or a fluorescent colorant as required by the present invention. Additionally, even though Pentel discloses the compound "ascorbic acid," Pentel does not disclose the use of this compound as an acid buffer.

Denninger

Denninger teaches a highlighter composition that does not smear a printed image upon application. Denninger achieves this with a highlighter composition that includes: a polymer dispersion, polyvalent salts (such as zinc chloride, see Example 1), and water (other dyes, marking agents, additives, and moisture retaining agents are optional) (see paras. [0013] and [0014]). Denninger teaches that "[t]he core of the invention is [] the combination of special polymer particles as carriers or stabilisers [sic] for the marking agent in combination

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with salts based on polyvalent, in particular bi- or trivalent cations" (see [0017]). Denninger does not utilize an acid buffer as described and claimed by the Applicant. Denninger discloses the general mechanism as to how printed images are smeared by highlighters (see [0005]). Denninger then states additional problems (see paras. [0006]-[0008]) and specific cures that are ineffective (see [0009]-[0012]). In fact, Denninger teaches that one such ineffective solution for the smearing problem is to add acid to the highlighter composition, since "the addition of acids unstabilises [sic] the marking liquid itself." (see para. [0009]).

Kaufmann

Kaufmann teaches the addition of an anti-blocking additive to a marking fluid to keep the marker tip from drying out. See abstract. Specifically, Kaufmann claims its invention is "directed to the use of solids as anti-blocking additives in common marking fluids . . . to provide a protecting and the evaporation hindering closure of the open, unprotected and unused capillary outlet opening." See col. 1, lines 9-14. Kaufmann defines the problem as "the capillary opening" becomes "clogged or plugged due to the drying of the marking fluid." See col. 1, lines 20-22. The solution requires an anti-blocking additive that "has the ability to crystallize out of the solvent" so that a "liquid crystalline to solid boundary [forms] hinder[ing] the evaporation of the solvent marking fluid." See col. 2, lines 20-22; col. 3, lines 12-14. Kaufmann discloses that one anti-blocking agent can be an organic acid, including succinic acid. See col. 4, lines 43-45, 63.

Nohr

Nohr teaches a colorant composition which is mutable on exposure to radiation. See col. 2, lines 55-61. In one embodiment, the compositions can be used as an erasable highlighter, i.e., "the underlining and highlighting can be subsequently erased by irradiation with ultraviolet radiation." See col. 4, lines 21-25. Specifically, "the marking fluid for use in writing instruments of the present invention are of conventional formulation except that conventional pigments are replaced by the mutable colorant composition of the present invention" (underlining added). See col. 56, lines 61-65.

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Claims 1-32

The Examiner has rejected claims 1-32 as being unpatentable over various combinations of Pentel, Denninger, Kaufmann, and Nohr. Specifically, each 103 rejection contains a combination of Pentel and Denninger with Nohr or Pentel.

The Examiner has used Pentel as a primary reference in combination with Denninger and Kaufmann in rejecting claims 1-12 and 27-28. The Examiner identifies that Pentel lacks the teaching of (1) succinic acid as an acid buffer, (2) fluorescent colorant as a highlighter colorant, (3) water or diethylene glycol as a liquid vehicle, and (4) Acid Blue 9 as a highlighter colorant. The Examiner combines Pentel with Kaufmann to address the first deficiency; specifically, the absence of succinic acid. The Examiner also combines Pentel with Denninger to address the other three deficiencies; specifically, the fluorescent colorant, water or diethylene glycol, and the Acid Blue 9.

The Examiner has used Kaufmann to address the first admitted deficiency of Pentel, i.e., succinic acid as an acid buffer. However, a close inspection of the present references reveals that the use of an acid buffer is not present in either Pentel or Kaufmann. Specifically, Pentel discloses a compound that is "a specific ascorbic acid derivative" in a range from 0.5 wt% to 3 wt%. Pentel never mentions for what purpose the compound is used. There is absolutely no teaching for what purpose or for what function the ascorbic acid derivative is used. The only information provided is that the purpose of the invention is to keep the pen point slightly drying. As such, Pentel does not disclose or teach the element of an acid buffer. The fact that ascorbic acid may be used as an acid buffer does not provide *prima facie* evidence that the ascorbic acid is being used as an acid buffer. In fact, since Pentel discloses an equivalent compound, magnesium salt of ascorbic acid, as an appropriate ascorbic acid derivative, which could not be used as an acid buffer, the disclosed list infers that the ascorbic acid derivative is not being used as an acid buffer.

The Examiner has responded to the above argument, alleging that as long as the reference contains the same chemicals, it works the same and "solves the same purpose." However, such a statement has no basis in fact. First, the compositions do not contain the same elements for the same purposes. Second, the disclosure of a chemical in a composition must be considered in terms of the functionality of the chemical, because a chemical can be used for vastly different purposes. For example, boric acid can be used as a cross-linking agent for polymers or as a base-neutralizer. As such, if boric acid is used as a cross-linker, it is consumed during the cross-linking reaction and then cannot be used to neutralize a base.

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Therefore, a single chemical can be used in vastly different purposes, and such context must be taken into consideration when combining references. This is especially true in the present case, since the disclosure of Pentel is lacking, and since what is disclosed by Pentel seems to indicate that the purpose of the acid is not as a buffer. In fact, Pentel may very well use the "specific ascorbic acid derivative" as a thin crystal membrane to keep the tip from drying out, similar to the mechanism disclosed by Kauffman, please see the detailed argument below. As such, if the acid is used a thin crystal membrane, the acid leaves the solvent and becomes a solid. Such a phase change would prevent the acid from actively stabilizing the marking fluid and preventing smear.

Regardless of Pentel's lack of teaching, the combination of Pentel and Kaufmann is clearly improper since Pentel requires the use of "a specific ascorbic acid derivative." The Examiner is attempting to improperly substitute a specific ascorbic acid derivative with succinic acid. The succinic acid of Kaufmann is not a specific ascorbic acid derivative, and as such, the substitution is improper.

Furthermore, Kaufmann does not use succinic acid as an acid buffer. Even though the Examiner is attempting to use succinic acid to fulfill the acid buffer element, Kaufmann specifically states that succinic acid is an anti-blocking agent. In other words, Kaufmann describes an "antiblocking additive or solid" having an "ability to form crystals during the crystallisation [sic] process at or in, respectively, the capillary outlet opening in the solvent or solvent mixture employed" forming a "liquid crystalline to solid crystalline boundary hinder[ing] the evaporation of the solvent of the marking fluid." See col. 3, lines 3-14; col. 4, line 43. Kaufmann further states that the anti-blocking agent or solid can be "an inorganic salt, an organic acid or a derivative thereof, an amino acid or a derivative thereof, an isocyclic, polycyclic or heterocyclic compound or a derivative thereof, a sugar or a sugar alcohol or a derivative thereof, urea or a derivative thereof or a sulfur compound." See col. 4, lines 44-50. Clearly, anti-blocking agents are not interchangeable with acid buffers since sugar alcohols, urea, cyclic compounds, inorganic salts, and amino acids cannot be used as acid buffers. The Examiner is attempting to use an anti-blocking agent as an acid buffer; however, such a use is improper as these uses are not equivalent. The mere disclosure of a compound does not establish a *prima facie* case of obviousness. The Examiner must first show that an acid buffer is present in a reference and then must show that the acid buffer can be properly combined with an additional reference. The Examiner has not shown the existence of an acid buffer in Pentel or Kaufmann. Additionally, the Examiner has not shown

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that Kaufmann and Pentel can be properly combined. As such, the Applicant respectfully requests that the Examiner withdraw the present rejections.

The Examiner has also used Denninger to address the next three admitted deficiencies of Pentel, i.e., fluorescent colorant as a highlighter colorant, water or diethylene glycol as a liquid vehicle, and Acid Blue 9 as a highlighter colorant. However, the combination of Pentel and Denninger is improper for at least two reasons. First, the combination of Pentel and Denninger does not cure the lack of an acid buffer. As previously discussed above, Pentel does not disclose the use of an acid buffer. Second, as discussed below, Denninger teaches away from the addition of acids.

As the Examiner has not addressed the "teaching away" case law as provided in the previous responses, the Applicant has resubmitted the argument for the Examiner's convenience and respectfully requests that the Examiner reconsider the current argument and respond accordingly.

Teaching Away

Applicant contends that the combination of Denninger with Pentel and/or Kaufman is improper. A proper 103 rejection must provide a combination of references that would give a likelihood of success at achieving the present invention. In this case, Denninger could not be combined with any acid-containing highlighter ink composition, since Denninger specifically teaches away from such compositions. Specifically, Denninger first explains the problem as after highlighting ink "the stabiliser [sic] of the ink experiences incipient dissolution . . . and that results in smearing of the text . . ." See [0008]. Denninger then teaches that acids cannot work in a highlighter composition, stating that "[t]he addition of acid however has not proven to be suitable in a practical context as on the one hand, dyes frequently react to changes in the pH-value by color changes, and on the other hand, the addition of acids unstabilises [sic] the marking liquid itself" (see [0009]). Denninger further explains that "even marking liquids with a pH-value in the weakly acid range do not afford any improvement in the situation . . ." (underlining added). See [0009].

As the Applicant has raised the issue of teaching away, the Applicant would like to review the current case law regarding teaching away for the Examiner's convenience. The Court of Appeals for the Federal Circuit has clearly stated that "an applicant may rebut a *prima facie* case of obviousness by showing that the prior art teaches away from the claimed invention in any material respect." In re Petersen, 315 F.3d 1325, 1331 (Fed. Cir. 2003). The

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Court has also stated that "[w]e have noted elsewhere, as a 'useful general rule,' that references that teach away cannot serve to create a *prima facie* case of obviousness." (emphasis added) McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354 (Fed. Cir. 2001). In identifying the appropriate standard for teaching away, the Court has further stated:

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant." (emphasis added) In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

In the present case, a person of ordinary skill in the art would be discouraged from adding a composition that contains acid, such as that described in Pentel, to Denninger's composition since Denninger specifically states that the addition of acids does not work. It is worthy to note that Denninger not only states that the addition of acids "do[es] not afford any improvement," but also that the addition of acids creates problems such as color changing and unstabilizing the highlighter liquid. See [0009]. Based on these explicit statements, Denninger teaches away from Pentel and Kaufmann as it would discourage a person of ordinary skill in the art to combine acid to a highlighter composition and since it suggests that the such a combination is unlikely produce the result sought by the present application.

Additionally, it is worth noting that the order of the combination is not a factor in the current case law regarding teaching away. Even though the Examiner has withdrawn the 103 rejections where Denninger was used a primary reference, the Applicant contends that the case law is valid regardless of whether Denninger is the primary reference or the secondary reference, as it still teaches away from allowing for the presence of acid, making the combination improper. As such, the Applicant respectfully requests that the Examiner withdraw the present rejections.

The Examiner has used Nohr as a primary reference in rejecting claims 13-26 and 29-32. However, Nohr does not appear to be applicable to the present invention. Specifically, the Examiner has alleged that Nohr discloses a method of reducing smear during highlighting. See Office Action page 6, 1st ¶. However, there is no such disclosure in the reference. Additionally, the Examiner alleges that Nohr

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discloses a highlighter colorant and an acid buffer. Specifically, the Examiner references [0020] and column 56, lines 30-65. However, the patent does not contain paragraph numbers and attempts by the Applicant to find an acid buffer in Nohr have been unsuccessful. The Applicant contends that Nohr contains no such disclosure. If the Examiner disagrees, the Applicant respectfully requests column and line references so that the Applicant may review the disclosure and respond accordingly.

Additionally, the Examiner referenced column 56, lines 30-65 as disclosing a highlighter colorant. However, this section of Nohr merely recites the mutable color compositions that can be used in marking instruments, such as highlighters. Specifically, Nohr states that "[g]enerally, the marking fluid for use in writing instruments of the present invention are of conventional formulation except that conventional pigments are replaced by the mutable colorant composition of the present invention." See col. 56, lines 61-65. In other words, typical highlighter colorants are removed and replaced by Nohr's mutable colorant compositions. To be clear, Nohr discloses mutable colorant compositions capable of changing from a visible state to invisible state when irradiated. As such, Nohr's compositions do not read on the present invention, including the various embodiments disclosed in Nohr, since those embodiments all contain mutable colorants which are clearly distinct from the present invention and are used in place of traditional marking colorants.

Additionally, the Examiner has referenced examples 29-37 as disclosing applying a highlighter composition to an image. However, these examples are directed to making mutable compositions and wavelength-selective sensitizers for the mutable compositions. None of the examples in Nohr address traditional highlighter compositions. As such, the Applicant contends that Nohr provides no elements of the present highlight ink composition. Furthermore, the teachings of Kauffman and Pentel do not cure the deficiencies of Nohr, and as such, the Applicant respectfully requests that the present rejections be withdrawn.

It has not escaped the Applicant's attention that the present reference may have been inadvertently cited or that the Examiner may have simply listed the wrong reference in the present Office Action. If this is the case, the Applicant requests that the Examiner provide the correct citation or reference so that the Applicant may have an opportunity to review the reference and respond accordingly.

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Additionally, the Applicant would like to specifically address the rejections to claims 28, 30, and 32, where the acid buffer further includes a weak base. The Examiner has seemingly relied upon Pentel in rejecting these claims. However, as previously discussed, Pentel does not disclose an acid buffer at all. Even if the Examiner reads Pentel as disclosing an acid buffer, the listing of derivatives in the Pentel abstract indicates the compounds to be equivalent and singular. Therefore, the limited teachings of Pentel do not teach an acid buffer further including a weak base. As such, the Applicant respectfully requests withdrawal of these rejections.

Furthermore, the Applicant would like to specifically address the rejection to claim 8, which requires the colorant be an acid-functionalized pigment. The Examiner has not explained how the Acid Blue-9 disclosed in Denninger would render claim 8 obvious. In the previous office action, the Examiner has stated that since the independent claims require a fluorescent colorant or acid functionalized pigment, Denninger need only disclose a fluorescent colorant. However, claim 8 requires an acid-functionalized pigment. The Examiner has now alleged that Denninger discloses Acid Blue 9. However, the Applicant would like to remind the Examiner that Acid Blue-9 is a dye, whereas the claim 8 is drawn to acid-functionalized pigments. Acid functionalized pigments are pigments where acid groups are affirmatively attached or associated with the surface a pigment, and thus, can be very acidic. Thus, to compare an Acid Blue-9 dye to an acid functionalized pigment is incongruent. The Applicant respectfully requests that the Examiner explain how Denninger reads on the acid-functionalized pigment embodiment of claim 8.

As the Applicant has shown that the various combinations of Denninger, Pentel, Kaufmann, and/or Nohr is improper and that the combination does not teach each and every element of the pending claim set, e.g., an acid buffer, the Applicant respectfully asserts that the pending claim set is allowable. Additionally, the Applicant submits that the present combination of references does not teach the additional elements that the acid buffer further includes a weak base, that the highlighter composition contain an acid functionalized pigment, and that the acid buffer be succinic acid. Therefore, the Applicant respectfully requests that the Examiner to reconsider the pending claim set in light of the arguments presented herein.

If the Examiner has any concerns that have not been addressed, the Applicant respectfully requests a detailed explanation of those concerns; enabling the Applicant to provide an appropriate response.

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CONCLUSION

In view of the foregoing, the Applicant submits that claims 1-32 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone the undersigned attorney at (801) 566-6633 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 12th day of July, 2007.

Respectfully submitted,



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